MARSHALL STAR

Vol. 37 / Num. 23 | Marshall Space Flight Center | February 19, 1997

Hubble Spacewalks Smooth After Marshall 'Rehearsals'

Paul Dumbacher, Neutral Buoyancy Simulator test engineer for Hubble Telescope testing, watches one of the extravehicular activities performed during STS-82.

The capabilities of NASA's Hubble Space Telescope have been extensively upgraded and the orbiting observatory has received a major refurbishment, following completion of five extra-vehicular activities or spacewalks during the STS-82 Space Shuttle mission of Discovery.

On five consecutive nights Discovery crew members — who trained at Marshall's Neutral Buoyancy Simulator (NBS) — donned space suits and worked on the 12-ton instrument, secured in the Shuttle's cargo bay. This mission — the second in a series of planned servicing visits to Hubble — has now accomplished its major objectives of installing two state-of-the-art instruments and performing maintenance intended to keep the telescope functioning smoothly until the next scheduled Shuttle visit in 1999.

Four spacewalks were originally planned for STS-82, but the decision was made last weekend to add a fifth so that astronauts might repair tattered thermal insulation which had been noted by the crew as they worked on and around the telescope.

As in the first Hubble servicing mission in December 1993, the work in orbit has been high drama for an Earthbound audience, with astronomers who have benefited from Hubble's breathtaking images likely being the closest followers. Not far behind in level of interest, though, have been the members of a sizable Marshall Center team who were involved in Hubble's design and development, and others who worked extensively in training the crew of Discovery — as well as the STS-61 crewmembers who performed the 1993 servicing.

The fact that the telescope is even capable of being repaired and improved over time is due to the fact that the design effort — managed at Marshall— incorporated planned maintenance into the project. The concept was that, just as a car needs repairs and new parts from time to time, so does sophisticated scientific equipment.

Typical of those who have intently kept up with the mission activities some 374 miles above Earth's surface is Paul Dumbacher, NBS test engineer for the STS-82 training effort. In that capacity, he has had the most recent involvement in a project marked by decades of work.

"We are the rehearsal hall before they actually go out and

continued on page 3

RLV Expo Here to Showcase Latest in New Technologies

NASA's Reusable Launch Vehicle (RLV) program — currently in the process of developing technologies for the next generation of space launch vehicles — will hold a two-day Technology Expo for invited industry, government agency and military representatives Feb. 25-26 at the Marshall Center.

Researchers and design engineers from five NASA centers will showcase and discuss each center's capabilities and roles in developing some of the cutting-edge systems and components to be used in future advanced space transportation systems, and some of those being used in the ongoing X-33 and X-34 programs. The exposition provides industry designers and technologists a chance to see ongoing NASA activities and available resources and capabilities that will aid future transportation technology efforts.

NASA centers scheduled to participate in the Tech Expo are: Ames, Jet Propulsion Laboratory, Langley, Lewis and Marshall.

Technologies to be discussed span a broad range, including advanced metallic thermal protection systems, vehicle systems analysis, structures and materials, hypersonic airbreathing propulsion, structures and materials, advanced information technologies and low-cost engine system development.

Black History Month at Marshall

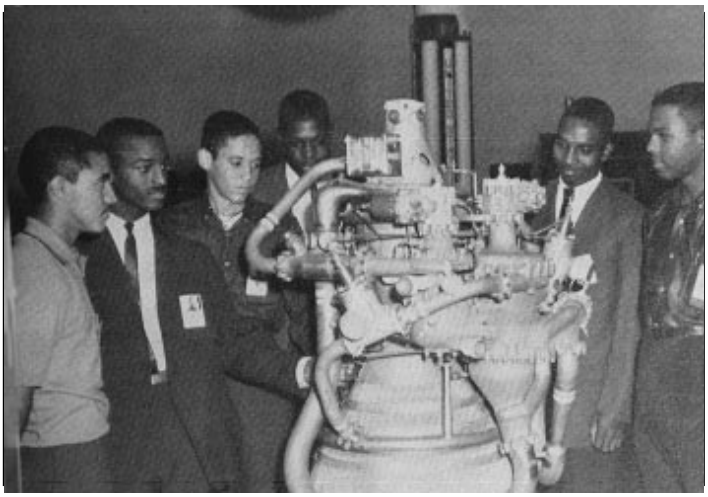
1963 Co-op Student Recalls Traveling Through History

by Mike Wright, Marshall Historian

On September 15, 1963, four black girls were killed in a church bombing in Birmingham.

Like millions of others, Howard Turnley will never forget that fact. He wasn't there when it happened but within hours of the event he passed through the bus station in Birmingham on his way to Huntsville.

The young electrical engineering student from rural Louisiana was a student at Southern University in Baton Rouge. At the time of the tragedy in Birmingham, he and a group of about half a dozen other students were traveling to the Marshall Space Flight Center in Huntsville.



In 1963, Howard Turnley (fourth from left) was among six Southern University cooperative training students at Marshall. Looking at an RL10 liquid hydrogen rocket engine at Marshall's Space Orientation Center are from left, Lawrence Champagne, William Porche, Warren August, Turnley, Hugh McKnight (featured in the Feb. 5 Marshall Star) and Morris Pipkins.

Turnley and the others knew what they were headed for in Huntsville — a chance to represent their university as cooperative education students, a chance to learn more about electrical engineering, and a chance to help build the huge rockets that would send the first men to the moon. "We did worked on circuitry. I was in a telemetry section, Turnley recalls." "One of my experiences was dealing with fuel cells."

Now, almost 35 years later and as part of Black History Month at the Marshall Center, Turnley remembers the opportunities that the work at Marshall afforded. "You have to understand we were the first of our kind. I guess they tried to make our experience rewarding."

That opportunity first arose when a NASA representative called the dean of engineering at Southern. "They were looking for students to participate who had reasonably decent grades," and, says Turnley, the dean needed students who could "survive the experience from a social standpoint."

The church bombing in Birmingham drove that point home as Turnley and others waited for their bus to depart for Huntsville. "I grew up in Louisiana and the rural South... I came from an all black high school and went to Southern which at that time was predominantly black." Huntsville would be Turnley's "first real encounter in working in an integrated environment." And, he recalls there were some times when it was difficult. But, he adds, the experience in Huntsville meant something to him that went way beyond electrical engineering. "It was a big

continued on page 3

Vince Huegele with two of his model rockets.

'Rocket Engineer' Also Avid Model Fan

by Nancy Robinson

"Five...four...three...two...one...we have a lift-off!" These words are music to the ears of a rocket engineer getting to witness the successful launch of a vehicle with which he or she has been involved. That feeling of success can be just as thrilling whether the vehicle is a 184-foot-high Space Shuttle, or a model rocket only a foot or two tall.

This is the message that Marshall's Vince Huegele has been conveying, for more than 10 years as past president and current senior advisor with the Huntsville Area Rocketry Association to the youth and young adults of the area. He's conducted teacher workshops and as a volunteer with Project Laser, has led the annual kickoff "launches" that have frequently set the tone for Alabama Space Week. With his help, students and club members have built successful rockets that have carried payloads including cameras, radio transmitters, even live insects on short duration flights.

Too young to have been involved in the Apollo program, Huegele devotes his current day-to-day efforts to lens technology for concentrating sunlight as part of the Advanced Space Transportation Program. In this new field of technology, he might someday get to see the fruit of his effort go into space. But for right now, he can "do it all" through his hobby involvement in model rocketry: design, build, and launch a vehicle in as little as a couple of weeks.

continued on page 3

Employee Comments Invited On System Level Procedures

Employees are invited to review and provide comments about Draft One of the System Level Procedures, according to Linda Carpenter who provides employee information for the ISO 9000 team. Now located on the web under Inside Marshall at http://www/inside, employees should select Centerwide Initiatives and then select ISO 9000.

Comments should be forwarded on Marshall Form 3739, Review Item Discrepancy (RID) to your ISO 9000 Organizational Representative from this list.
AA, Michael Haynes; BC, John Howell; CO, Pat Schultz; CN, Annette Tingle; EE, Hank Miller; EJ, TBA by Sherm Jobe; FA, Sandy Kirkindall; EB, Jim Blanche; ED, Ricky Wilbanks; EH, Richard Wegrich; EL, Robert Zagrodsky; EP, David Harris; ES, Roslin Hicks; EO, Mark McElyea; GP, Byron Butler; JA, Harvey Shelton; PD, Don Thurman; SA , John Pea; CR, Don Miller; and XX, Dennis Smith.

STS-82 Spacewalks

from page 1

perform an EVA," Dumbacher said. "The astronauts worked at the NBS the same as if they were on orbit.

"Many observers of the STS-82 EVAs will never realize the detail of each task procedure," he added. In all, a total of 33 hours and 11 minutes were logged during the five spacewalks.

But, that amount of time is dwarfed by the 168 hours the crew spent in Marshall's NBS, practicing procedures underwater—over and over—to make sure they would go smoothly when it was time for the actual work in space.

Rocket Engineer

from page 2

"I was just a kid when I got started on rockets. It was innocent, simple, harmless at the time. I never thought it would lead to this," says Huegele, a self-confessed "rocket addict."

Why would anyone want to do something in his time off so closely related to what he does as a career? Huegele answers that it's "still fun"—from the sound of the engine to the smell of the exhaust —and even to imagining the sensations of the astronauts who ride "the real thing."
Editor's Note: For those interested in the Rocketry Association, Huegele provided this statement regarding its purpose: *We provide a club environment to bring the spectrum of rocketry to full circle. The adults, pushing the frontiers in advanced modeling with large, elaborate rockets go to the schools to do demonstrations and draw in the beginning rocketeers, who hopefully progress through the levels of modeling. Perhaps, some will go on to actually become"rocket scientists" or engineers.*

Black History Month

from page 2

confidence builder for me... It helps to know that you can compete on the same level that somebody else can... that your ability and intellect are about the same."

As a young student, Turnley may have doubted his ability to compete in a new environment. But, those who knew him as he was growing up didn't.

"My mother worked at the school. She was a cook in the cafeteria. My father had several different businesses of his own. He sold insurance. He had a cafeteria at one point. They were basically poor and uneducated. My mother had an eighth grade education, and my father had a third grade education. But they knew the value of education and encouraged me to go as far as I could... Although they didn't have a lot of education they demanded that we come home with A's. We had to explain when we didn't ."

Turnley was also influenced by a coach, a science teacher and an English teacher. "They were extremely influential and played a significant role in my attending college and becoming the person I am today."

Even as a child, Turnley had been interested in science. During his senior year in high school he thought about being a physicist. But when he reached Southern he decided to major in electrical engineering. There he met again with a friend and fellow athlete from Allen High School who was already majoring in electrical engineering. Today, Turnley says that friend is a three-star general working for the Army Corps of Engineers.

Turnley's career has included serving as a captain in the Air Force, owning and managing his own businesses, and serving as senior vice president for administration at Texas Southern University. Currently he is president and chief executive officer of HTInfonet, Inc., a firm that does training and consulting for educational and government entities.

His work includes heavy involvement in telecommunications and information technology with roots in the knowledge he gained in electrical engineering in college and at the Marshall Center. "I have always kept up with the space program primarily as a result of my experience as a coop student."

He says one of the most inspiring moments at Marshall was meeting Dr. Wernher von Braun. "It was one of those opportunities of a lifetime." In fact, von Braun's own views on the need for an increased emphasis on science and math in schools parallel Turnley's. "Study as much math and science as you can regardless of your major. Read as much as you can," he advises students today.

"But the most important thing you have to do is develop confidence," adds Turnley.

He remembers passing through a Birmingham bus station one night in 1963. He remembers a time six years later when, as a young captain at Kelly Air Force Base, he and his wife watched Neil Armstrong walk on the moon. "I felt very much a part of it." Today, Turnley feels connected to both events. "We were traveling through history."

Employee Ads

Miscellaneous

★ 1987 Dynatrak fish & ski boat, 17.5ft, fully equipped, $6,500. 734-8649
★ Airhockey table, $100; Magnavox 13" color TV with remote, $40. 533-5362
★ Bass drum, JRX-50 & junior bass drum with speed king pedal, $100 ea. 883-6416
★ Antique mahogany mantel, sofa, chairs, barstools, credenza, mirror, misc household items, and tools. 205-771-0797
★ 1991 Eagle mobile home, 80x14, new carpet, central H/A, deck, refrigerator, $18,000. 852-3133
★ Notebook computer & printer Compaq, 286 hard drive and high density drive, $200 o.b.o. 837-1275
★ Entertainment center, custom made, solid oak for 27 inch TV $400 o.b.o. 837-1275
★ Craftsman 10" table saw, 1 year old, $100. 880-7305
★ Craftsman self-propelled rear bagger 22" mower, $85. 880-7305
★ Head skis, 160cm, tyrolia 180D bindings, $90 o.b.o. 922-0958

Vehicles

★ 1985 Honda XL350R, trail bike, street legal, $825. 233-3773
★ 1993 Taurus GL 4-door, 54K miles, $9,525 NADA, asking $8,400. 880-6792
★ 1993 Ford Ranger splash, 6-cyl., 5-speed, red w/gray interior, 53K miles, new tires $8,900. 464-9352
★ 1991 Mazda 929 all options, 1 owner 80K miles, $8,500. 880-7305
★ 1988 Ford Crown Victoria LX, vinyl top, $2,750. 883-2653
★ 1995 Honda Shadow 600cc, saddlebags & helmet included, 300 miles, $5,200 o.b.o. 721-3997
★ 1991 Nissan Maxima GXE, metallic pearl color, one owner, Goodyear Aquatreads, 98K miles, $8,000. 830-0851
★ 1979 Caprice Landau, original owner, $1,500 o.b.o. 881-1249
★ 1991 Maxima GXE, leather, sunroof, CD, 88K miles, $11,000 firm. 828-9339
★ 1990 Buick Riviera, 2-door coupe, ruby red, 79K miles, CD player, $7,900. 881-2601

Found

★ Wedding ring vacinity of exercise facility identify inscription. 534-8603

Wanted

★ CD player for church use. 776-3040
★ Dining room set, cherry or mahogany. 883-2757

Center Announcements

☛ ***Federal Almanac Order —*** Please pick up your 1997 Federal Employee Almanacs at the MESA Ofc., bldg. 4471, rm. C105 between 8:30 a.m.-12:30 p.m. Cost is $9 ($8 for MESA members). Bookstore cost is $11.95 plus tax.

☛ ***Redstone Arsenal & MSFC EXPO '97—*** Systems & Software EXPO is scheduled for Feb. 27 at 10 a.m. to 2 p.m. at the Redstone Officers' Club. The seminar is hosted by Information Systems Services. Free admission & refreshments. For more information call 1-800-746-0099.

☛ ***Easter Egg Hunt Needs Volunteers —*** Volunteers are needed to coordinate and assist in the annual NASA Exchange sponsored Easter Egg Hunt for dependents of Marshall employees and on-site contractors. The event is tentatively scheduled for March 16, with rain date on March 22. Workers are needed to make this event a success.

☛ ***AGA —*** The North Alabama Chapter of the Association of Government Accountants will meet on Feb. 20 at the Marriott. Guest speaker is Ms. Debra L. Traughber, Dir. of Family Services Ctr. Topic is "Dancing with Porcupines." The Social hour starts at 6:30 p.m. with dinner at 7:15 p.m. For reservations contact Sandra Julian, 876-2373.

☛ ***MOO Retirees —*** The Management Operations Office retirees will meet for breakfast/lunch on Feb. 27 (4th Thursday each month) at the Cracker Barrel in Madison at 10 a.m. In addition to retirees, all present or former MOO employees are welcome. If there are any questions call 539-0042.

☛ ***Engineers Week Award Banquet —*** Huntsville/Madison County Engineers Week Award Banquet will be held on Feb. 20 at Huntsville Marriott. The speaker will be Nancy Archuleta, CEO of Mevatec Corp. Tickets are $20 and deadline for purchase is Feb. 17. Tickets may be purchased through UAH at 890-6474.

☛ ***NCMA —*** The Huntsville Chapter of the National Contract Management Assn. will hold a workshop from 5:30 p.m. to 8:30 p.m. on Feb. 27 at the Lockheed Martin Office located at 4800 Bradford Drive. Dr. Robert Hawkins of the Navy Acquisition Management Training Office will speak on the topic "Non-Verbal Communications." The cost is $25 for members and $30 for non-members. Information on membership is available from Peggy Gunter at 881-0544.

☛ ***MESA —***The February meeting of the Marshall Engineers and Scientists Association, IFPTE Local 27, will be Feb. 20 at 11:30 a.m. in bldg. 4471, rm. C105. Refreshments will be served.

☛ ***HEOS*** - The Huntsville Electro Optical Society will conduct its next monthly luncheon meeting on Feb. 20 in the regimental room of the Redstone Arsenal Officer's Club. The luncheon will begin at 11:30 a.m. and the speaker, Jeff Rothermel of MSFC, will begin at 12:00 noon. No luncheon reservations are required.

☛ ***Toastmasters International —*** Toastmasters International will have a lunch meeting each Tuesday from 11:30 a.m. to 12:30 p.m. in Building 4610 cafeteria conference room.

Job Opportunities

CPP 97-11-RE, Visual Information Specialist (Exhibits), GS-1084-11/12, Public Affairs Office Public Services Office. Closes Feb. 20.

MARSHALL STAR

Marshall Space Flight Center, Alabama 35812

The Marshall Star is Published every Wednesday by the Public Affairs Office at the George C. Marshall Space Flight Center, National Aeronautics and Space Administration. Contributions should be submitted no later than Friday noon to the Marshall Public Affairs Office (CA10), Building 4200. Submissions should be written legibly and include the originator's name. The Marshall Star does not publish commercial advertising of any kind.

Writer-Editor – Angela D. Storey
Director, Media Services – David B. Drachlis
Director of Public Affairs – John B. Taylor
U.S. Government Printing Office 1997-532-111-40049

BULK RATE
Postage & Fees PAID
NASA
Permit No. G-27